

Appl. No. 10/010,548
Amdt. dated November 26, 2003
Reply to Office Action of August 29, 2003

REMARKS

In response to the Office Action dated August 29, 2003, Applicants respectfully request reconsideration based on the above claim amendment and the following remarks. Applicants respectfully submit that the claims as presented are in condition for allowance.

Claims 1-6 are pending the present application. Claims 2-3 have been canceled without prejudice and claims 1 and 4-5 have been amended, leaving claims 1 and 4-6 for consideration upon the entry of the amendment. Support for the amendment can be found in the entire specification. No new matter has been added by the amendment.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-2 and 6

Claims 1-2 and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by Albridge Jr. et al., US 4,775,789 (hereinafter "Albridge") for the reasons stated on the pages 2-3 of the Office Action. Claims 1-2 and 6 were further rejected under 35 U.S.C. § 102(b) as being anticipated by Motley Jr. et al., US 4,662,977 (hereinafter "Motley") for the reasons stated on the pages 3-4 of the Office Action. Since claim 2 has been canceled without prejudice, the rejection of claim 2 is moot.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). However, neither Albridge nor Motley discloses the limitation: extracting an ion beam having a predetermined polarity from an ion source to accelerate the ion beam such that an incident angle of the ion beam is in a range of 75° - 85° from a vertical line to a horizontal surface of a reflector, as claimed in claim 1. Thus, neither Albridge nor Motley anticipates claim 1. Claim 6 depends from claim 1, thus is believed to be allowable due to its dependency on claim 1.

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Claim Rejections Under 35 U.S.C. § 103

Claims 3-4

Claims 3-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Albridge for the reasons stated on the pages 4-5 of the Office Action. Since claim 3 has been canceled without prejudice, the rejection of claim 3 is moot.

The Examiner states that because Albridge clearly discloses the angle of incident of the ion beam is a result effective variable and the result effective variable is commonly determined by routine experiment, the process of conducting routine experiments so as to produce an expected result is obvious to one of ordinary skill in the art. Applicants respectfully traverse the rejection, as following reasons.

"The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). In claim 1, an ion beam is incident to the reflector with the incident angle of the range of 75° - 85°, with respect to the vertical line of the reflector such that all the incident ion beams are completely neutralized by the reflector without increasing the length of the reflector. Further, by adjusting the incident angle in the range of 75° - 85°, an anisotropic etching is improved in the method of claim 1 (See the page 3 or 10 of the Application). Thus, the incident angles of 75 - 85° are critical in performing the complete neutralization of the incident ion beam and in improving the anisotropic etching. Accordingly, the incident angles of 75° - 85° are not a result-effective variable.

On the contrary, the grazing angle of Albridge, as indicated by the Examiner, is merely a result-effective variable. That is, Albridge discloses that angles of 1 to 4 degrees provide high efficiency of operation, but it does not disclose that the angles of 1 to 4 degrees are critical to obtain a controlled low energy beam. Further, Albridge discloses that the reflected beam will be composed of neutral oxygen atoms, neutral molecules and remaining ions, which were not neutralized. Therefore, the angles of 1 to 4 degrees, which are the mere result-effective variable, does not teach the incident angles of 75° - 85°, which are not recognized to be a result-effective variable.

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Thus, Albridge does not teach the limitation: extracting an ion beam having a predetermined polarity from an ion source to accelerate the ion beam such that an incident angle of the ion beam is in a range of 75° - 85° from a vertical line to a horizontal surface of a reflector, as claimed in claim 1. Accordingly, Albridge does not render obvious claim 1. Claim 4 depends from claim 1, thus is believed to be allowable due to its dependency on claim 1.

Claims 3-5

Claims 3-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Motley for the reasons stated on the pages 5-6 of the Office Action. Since claim 3 has been canceled without prejudice, the rejection of claim 3 is moot.

The Examiner states that although Motley fails to explicitly disclose value of the angle of the incidence of the ion beam on the reflector from a vertical line to a horizontal surface of the reflector, Motley clearly teaches that the angle of the incidence is a result effective variable. Applicants respectfully traverse the rejection, as following reasons.

As described above, the incident angles of 75° - 85° , in claim 1, are not the mere result-effective variable but the critical factors for the complete neutralization of the ion beam and the improvement of the anisotropic etching. Thus, the limitation of claim 1: extracting an ion beam having a predetermined polarity from an ion source to accelerate the ion beam such that an incident angle of the ion beam is in a range of 75° - 85° from a vertical line to a horizontal surface of a reflector is not taught by Motley.

Further, a neutralization plate (50 in Fig. 1), in Motley, is movable for directing plasma on the semiconductor wafer to be etched precisely, instead of neutralizing the incident ion beam completely. Thus, there is no suggestion or motivation, in Motley, to modify Motley to arrive at the invention of claim 1. Accordingly, Motley does not render obvious claim 1. Claims 4-5 depend from claim 1, thus are believed to be allowable due to their dependency on claim 1.

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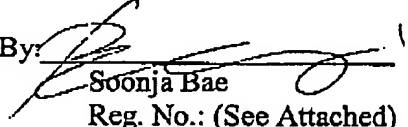
Conclusion

In view of the forgoing amendments and remarks, Applicants submit that this application is in condition for allowance. Early notification to this effect is requested.

If there are any charges due in connection with this response, please charge them to Deposit Account 06-1130.

Respectfully submitted,

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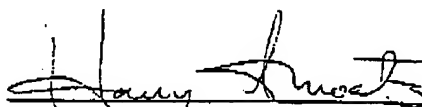
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Expires: August 4, 2004



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